

## REMARKS

Independent Claims 1, 12 and 24 are amended to recite that the claimed controller is usable with either a primary or secondary battery. Basis is found in the specification at p. 7, the para. bridging to p. 8. These claims are also amended to recite a ground to the negative electrode of the battery cell being in common with a ground to the controller, and further that there be a ground to the negative terminal of the battery container. The negative terminal ground is, in turn, in common with either the aforementioned common ground or is a virtual ground, isolating the negative terminal of the container from the negative electrode of the cell. Basis for the latter amendments is found, *inter alia*, at Figs. 4A, 4B, 7-9, 10-13 and 15. No new matter is added.

The claimed invention, with the newly added limitations, provides the advantages and disadvantages recited in the Specification at 18:23-36. Specifically, one embodiment provides the advantage of a simple circuit design, while the other embodiment provides for use of a DC/DC converter or charge pump.

Claims 1-27 are rejected under 35 USC 102-03 over Nagai et al. (5,783,322), Stewart (5,433,558) and/or Shambaugh et al (4,418,127). None of these references, taken alone or in combination, teach or suggest the claimed grounding arrangement. Additionally, the claimed arrangement is usable for both primary and secondary batteries, further separating the claimed battery from Nagai, which is limited to rechargeable batteries. The Examiner is respectfully requested to reconsider and withdraw all rejections over the prior art.

Various dependent claims are amended, overcoming rejections under 35 USC 112. Claims 13 and 23 are canceled hereunder, overcoming rejections under 35 USC 112. The cancellation of Claim 13 also cures an objection to the drawings. The Examiner is respectfully requested to reconsider and withdraw all rejections under 35 USC 112.

The Examiner has objected to the drawings as not showing the second controller of Claim 12. Applicants respectfully submit one of ordinary skill would understand a multiple cell battery, a multiple cell battery having multiple controllers and that an additional drawing is not necessary under 37 CFR 1.81 to understand the subject matter to be patented. One of skill, applying Stewart for example, in order to find the invention of Claim 12

obvious, as set forth in the Office Action, would understand Claim 12 without the need for an additional drawing. Accordingly, the Examiner is respectfully requested to reconsider withdraw this objection to the drawing.

The Office Action further requests another copy of the IDS filed Sept. 7, 1999 as the fax was apparently incomplete. Applicants' file does not show a fax on that date, but does show an IDS was filed on Sept. 2, 1999. Applicants' attorney, the undersigned, left a phone message on this date asking the Examiner if this was the IDS in question. The Examiner is respectfully requested to contact the undersigned so that the IDS in question can be identified and promptly submitted for consideration. Additionally, the Office Action requests submission of the non-U.S. patent documents and the non-patent art, as these documents were apparently missing from the file. Applicants respectfully note these documents were resubmitted to the Patent Office on Oct. 4, 2000.

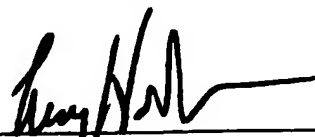
If these documents do not appear in the application file under either the original submission or the second submission, the Examiner is respectfully requested to contact the undersigned by telephone, so that arrangements can be made to ensure any further IDS submissions are appropriately placed in the file.

The Examiner is respectfully requested to enter the forgoing amendments, consider all art submitted by the applicants in each IDS, and to allow the claims remaining in this application.

Respectfully submitted,

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**OFFICIAL  
FAX RECEIVED  
MAR 02 2001  
GROUP 1700**

Mar. 2, 2001

Version with markings to show changes made

1(amended). A battery having a controller suitable for use in either a primary or secondary battery, said battery comprising:

(a) a container having a positive terminal and a negative terminal;

(b) a battery cell disposed within said container, said cell having a positive electrode, a negative electrode, a ground to said negative electrode of said cell and a cell voltage measured across said positive and said negative electrodes of said cell;

(c) a controller electrically coupled between said electrodes of said cell and said terminals of said container to form, from the cell voltage, an output voltage across the positive and negative terminals of the container, said controller having a ground in common with said negative electrode of said cell and

(d) a circuit responsive to a predetermined condition of said battery, the circuit being operable to uncouple the output voltage of the controller from the terminals of the container upon detection of said predetermined condition, said container further having a ground to said negative terminal, wherein said ground to said negative terminal is in common with either said ground common to said controller and said negative electrode of said cell or is a virtual ground isolating said negative electrode of said cell from said negative terminal of said container.

Fig 4. A  
only  
Amended

6(amended). The battery of Claim 1 wherein said cell has an internal impedance and said circuit is operable for monitoring the cell internal impedance, the circuit being responsive to a predetermined condition including the cell internal impedance exceeding a predetermined impedance, said predetermined impedance being known and greater than said cell internal impedance, the circuit uncoupling the output voltage of the controller from the container terminals upon detection of the predetermined condition to generally prevent an over-discharge of the cell.

8(amended). The battery of Claim 1 wherein said container has an internal pressure, said circuit is operable for monitoring the pressure within said container, the circuit being responsive to a predetermined condition including the container pressure exceeding a pressure limit, the circuit uncoupling the output voltage of the controller from the container terminals upon detection of the predetermined condition.

12(amended). A multiple-cell battery having a controller suitable for use in either a primary or secondary multiple-cell battery, said multiple-cell battery comprising:

a first container having a positive terminal and a negative terminal;

a first battery cell disposed within said first container, said first battery cell having a positive electrode, a negative electrode, and a battery cell voltage measured across said positive and said negative electrodes of the first battery cell;

a first controller electrically coupled between the electrodes of said first battery cell and the terminals of said first container to create a first container output voltage measured across said first container positive and negative terminals;

a second container electrically coupled to said first container, said second container having a positive terminal and a negative terminal;

a second battery cell disposed within said second container, said second battery cell having a positive electrode, a negative electrode, and a battery cell voltage measured across said positive and said negative electrodes of the second battery cell at least one of said first cell and said second cell having a ground to the negative electrode of that cell;

a second controller electrically coupled between said electrodes of said second battery cell and said terminals of said second container to create a second container output voltage measured across said second container positive and negative terminals, at least one of said first controller and said second controller having a ground in common with said negative electrode of said respective cell; and

a circuit responsive to a predetermined condition of said multiple cell battery, the circuit being electrically coupled to one of the first and second controllers to uncouple the respective

one of the first and second contain output voltages from the terminals of the respective one of the first and second contain upon detection of said predetermined condition, said container further having a ground to said negative terminal, wherein said ground to said negative terminal is in common with either said ground common to said controller and at least one negative electrode of one said cell, or is a virtual ground isolating said at least one negative electrode of said cell from said negative terminal of said container.

22(amended). The multiple cell battery of Claim 12 wherein said battery is attached to a load having a current demand and each of said controllers has a capability to create a minimum output voltage, said predetermined condition includes the condition wherein the current demand of [a] the load attached to the multiple cell battery exceeds the capabilities of at least one of the controllers to create a minimum output voltage, the circuit being further operable, upon uncoupling the output voltage of the controller from the terminals of the container, to couple at least one of the cells directly to said respective container terminals to form the cell voltage at the respective container terminals.

24(amended). A method for extending the useful life of a battery comprising the steps of:

[(a)] providing a battery having a controller suitable for use in either a primary or secondary battery including:

(i) a container having a positive terminal and a negative terminal; and

(ii) a battery cell disposed within said container, said cell having a positive electrode, a negative electrode, and a cell voltage measured across said positive and said negative electrodes of said cell;

the method being characterized by:

[(b)] electrically coupling a controller between said electrodes of said cell and said terminals of said container to form, from the cell voltage, an output voltage across the positive and negative terminals of the container providing a ground in common with said negative electrode of said cell and said controller

providing a ground to said negative terminal of said container  
placing said;

placing said ground to said negative terminal in common  
with either said ground common to said controller and said  
negative electrode of said cell, or making said ground to said  
negative electrode a virtual ground, thereby isolating said  
negative electrode of said cell from said negative terminal of  
said container and

[(c)] in response to detection of a predetermined condition of the battery, uncoupling the output voltage of the controller from the terminals of the container